AQUAGUIDE
Missouri Department of Conservation—*Fish and Other Aquatic Life*

Stocking Fish in Your Pond

So, you want to stock fish in your pond? If you have constructed a new pond you need to get it off to a good start by stocking the right combination of fish species, sizes, and in the right sequence. Ponds that are not stocked properly in the beginning can develop unbalanced populations of slow growing, stunted fish. If you are stocking an older pond you will need to determine what fish are already present and their condition. With new or old ponds you must decide whether or not it will support a desirable fish population. There are several things to consider.

Ponds that are too shallow are prone to fish kills caused by low oxygen conditions during winter ice over or hot weather drought conditions. To prevent this type of fish kill, your pond should be at least 8 feet deep in 5 percent to 10 percent of the pond area.

The pond should have an adequate watershed to maintain normal water levels and have a structurally sound pond dam and spillway.

Ponds that are muddy can cause the fish to grow slowly, and the muddiness can be caused by a number of reasons.

If you need assistance in diagnosing problems or evaluating your pond for stocking contact the nearest Missouri Department of Conservation office.

Recommended fish stocking species

A proven fish stocking combination that provides both food and good sport-fishing is bluegill, channel catfish, largemouth bass and often fathead minnows initially as a forage fish. When stocked in this order and properly managed, these species together provide great fishing and good eating.

Fathead minnows

Fathead minnows are often stocked in new ponds and lakes as a forage fish. If this is done before stocking the impoundment with a typical bass-bluegill-channel catfish combination, an immediate nutrient base for the sport fish population is ensured. Although the bass-bluegill-channel catfish combination will usually do well on its own, minnow stocking helps ensure the fish population gets off to a good start. It will provide the newly introduced bass with a food source as soon as they are large enough to capture it.

Bluegill

A fine sport and prey fish, bluegill are well adapted to pond life and particularly suited for stocking in combination with largemouth bass. Bluegill serve as a food source for bass, provide many angling opportunities and are great table fare. While bass harvest needs to be on the conservative side, bluegill are generally more abundant and provide more pounds of fish that can be harvested.

Food of young bluegill includes microscopic plants and animals. As bluegill increase in size, their food preferences gradually change to aquatic insects, snails, small crayfish and an occasional small fish. Adult bluegill feed mainly on aquatic insects. Terrestrial insects are eaten when available. Few Missouri bluegill are caught that exceed a pound, but they have been known to exceed 12 inches in length and weigh more than a pound.

The average life span is about five years, but they can live eight to 10 years. When overabundant, they seldom live more than four to five years and may never exceed 5 inches in length.

For more information: Go to **short.mdc.mo.gov/Zno** for the Conservation Department's aquaguide *Managing for Large Bluegill*.

Channel catfish

A favorite of many anglers, channel catfish do well in ponds and provide additional angling pleasure when stocked in combination with largemouth bass and bluegill.

Channel catfish eat a wide variety of foods ranging from fish to insects to aquatic plants. Fish appear in the diet when catfish reach 12 to 14 inches long. Channel catfish do not play a significant fish predator role in Missouri ponds. Fish eaten are generally dead or injured. Small catfish feed mostly on aquatic insect larvae, crayfish and algae.

Fingerling channel catfish less than a year old that are stocked in a new pond in the fall can be 11 to 12 inches long the following year, 14 to 15 inches long after two years, and 16 to 18 inches long after three years. Channel catfish may live to be 12 to 15 years old, but six to 10 years is more common.

Channel catfish can and do reproduce in ponds. Spawning usually takes place in a dark cave-like hole. Examples are hollow logs and beaver or muskrat holes enlarged by the male. The fish also use tile and other artificial structures placed in the pond. Spawning in Missouri takes place from late May to late July.

In clear ponds, bass and bluegill usually eat most of the eggs and young. If this were not the case, the pond would soon be overrun with small catfish that could not obtain enough food to grow. Because survival of young channel catfish is poor in ponds stocked with bass and bluegill, supplemental stocking is usually necessary to maintain the catfish population.

TIP: Because adult bass can eat channel catfish less than 8 inches in length, ponds with an existing bass population should only be stocked with channel catfish that are larger than 8 inches.

For good growth, up to 20 per acre of 8-inch or larger catfish may be stocked per year. Unless you supply additional food, avoid building population levels greater than 60 or 70 channel catfish per acre. For best results, keep good records of fish stocked and fish caught and removed. Channel catfish are available from commercial hatcheries in Missouri.

Some pond owners want to stock only channel catfish. When channel catfish are stocked alone and are allowed to grow to adult size, reproduction and survival rates can be so high that crowding and slow growth result. In this situation, all adults should be harvested before they reach 15 inches. Otherwise, there soon may be too many catfish in the pond for the available food. Slow growth and muddy water will result.

Too many large channel catfish in the pond may lead to a fish kill due to a lack of sufficient oxygen. You must harvest these fish as they get larger.

Largemouth bass

This predator species, easily recognized by their large mouth and dark stripe or blotches down the side, have been stocked in thousands of Missouri ponds. Many anglers prefer bass for their growth potential and fighting ability. Largemouth bass are well adapted to ponds and reproduce readily in the ponds environment.

Bass eat a variety of foods. Fish and aquatic insects make up most of their diet. Bass also eat frogs and crayfish when available. Less frequently, they will eat other animals, such as mice, moles, snakes, leeches and baby ducklings.

Young bass grow rapidly when food is plentiful. In ponds with good growth conditions, they may reach a length of 3 to 5 inches their first summer, and from 12 to15 inches after three years. Largemouth bass, like many other fish, grow faster in the southern part of the state where the growing season is longer, but a lack of soil fertility in some areas may neutralize that advantage. Largemouth bass usually live six to 10 years, but some have lived as long 15 years. Many largemouth bass larger than 8 pounds have been taken from Missouri ponds.

Because the largemouth bass is a predator species and reaches a relatively large size, adequate prey fish must be available for this species to reach its growth potential. Stocked alone, bass usually overpopulate and do not grow well.

Other acceptable species

Almost any freshwater fish species will live and grow in ponds. Some of these species can add to the enjoyment derived from a pond, and some will help solve or control other problem species. Some of these acceptable species are discussed below.

Redear sunfish

This sunfish can grow to 12 inches. They reproduce poorly in ponds when competing with bass and bluegill, but generally will maintain a low-density population.

They feed on small snails, clams, crayfish and other animals. Redear sunfish may help to control populations of snails, which are a required host in the life cycle of the yellow and black grub.

If you want to stock redear in a new or renovated pond, replace 1/4 of the recommended number of bluegill fingerlings with 1- to 2-inch redear in a new pond. When stocking into an established bass population, stock 75 redear that are 4 inches or larger per acre.

For more information: To find out how redear sunfish can help control grubs, go to **short.mdc.mo.gov/Zno** for the Conservation Department's aquaguide *What's Bugging My Fish.*

Hybrid sunfish

Hybrid sunfish are an artificial cross between two sunfish species, generally the green sunfish and the bluegill. These hybrids grow larger and more rapidly than regular bluegill, but the difference is slight without artificial feeding. Since they are somewhat more aggressive in their feeding habits, hybrid sunfish are easier to catch than other sunfish. Because they will not typically produce enough offspring to allow bass to grow at normal rates, hybrid sunfish should not be stocked alone with bass. Without artificial feeding, you may stock up to 100 hybrids per acre to replace a similar quantity of bluegill. With feeding, replace up to 200 bluegill per acre with hybrids. If an existing bass population is present, stock hybrids that are at least 4 inches in length at a rate of up to 75 per acre.

Grass carp

Grass carp are an Asian fish brought to this country because they eat aquatic vegetation. They are commonly stocked to control excess vegetative growth and are available from commercial producers. They will not reproduce in ponds or lakes, but will live up to 10 years and reach weights of 30 to 60 pounds. Average stocking rates to control most rooted vegetation are approximately 2.5 grass carp 8 to 10 inches long per surface acre of vegetation. This species is normally stocked after problem vegetation is apparent.

For more information: To learn more about controlling pond vegetation, go to **short.mdc.mo.gov/Zno** for the Department's aquaguide *Grass Carp Control Weeds in Ponds and Lakes.*

Species not recommended for Missouri ponds

There are many species that are available to landowners but may cause management problems. These species should be avoided when stocking.

Crappie

Although crappie are valuable sport fish in larger bodies of water, they seldom provide an acceptable harvest in small lakes or ponds. They prey on small fish and compete with adult bass for food. Crappie spawn several weeks earlier than bass and bluegill, so the newly hatched crappie have a head start in the competition for food needed by all later hatched fish.

When crappie are stocked in ponds usually one of two conditions develops. A few stocked fish survive predation, live, and grow to a very large size; or, much more commonly, they reproduce and the young survive in great numbers. Soon the pond becomes overpopulated with small, slow-growing crappie that are of an unacceptable size. For these reasons, it is recommended that a Conservation Department fisheries biologist be consulted before stocking crappie. Pond owners often stock this species by mistake when they get their fish from creeks or other ponds.

For more information: Go to **short.mdc.mo.gov/Zno** for the Conservation Department's aquaguide *Managing Crappie in Small Impoundments.*

Bullheads

Bullheads, a member of the catfish family, have an almost square tail fin, while the channel catfish's tail fin is deeply forked. Bullheads, often called mud cats, are not recommended for pond stocking because their bottom feeding activity may cause a pond to become muddy. This handicaps the sight-feeding bass and reduces food production. When stocked alone, bullheads overpopulate. In clear ponds with a good bass population, few bullheads will survive; but the ones that do will grow to a large size, are fun to catch and provide good eating.

Common carp

Common carp are not recommended for stocking in ponds. These bottom feeders tend to overpopulate and grow slowly. Like bullheads, their feeding activity tends to muddy the water.

Green sunfish

This species, frequently called pond perch, creek perch or black perch, is often found in ponds that have not yet been stocked with largemouth bass and bluegill.

This sunfish is often confused with bluegill. The green sunfish has a much larger mouth and the ear flap is black with a whitish or yellowish margin. Stocking this species in ponds is not recommended.

If green sunfish are present before stocking and are large enough to be a predator, they can present a serious threat to the small bass, bluegill and channel catfish that are stocked later.

CAUTION: If green sunfish are allowed to spawn before the bass and bluegill are stocked, severe overpopulation and food competition may occur. The pond may never produce good fishing.

Green sunfish have been used experimentally as a substitute for bluegill in combination with largemouth bass. The green sunfish provided some food for the bass but not enough for good bass growth, and they compete with the bass for many food items. This species is often stocked by pond owners by mistake when they get their fish from creeks or other ponds. Green sunfish will eventually find their way into many ponds. They do not pose a serious problem if the bass population is already present and well managed.

Other fish species

While many other species have been stocked in ponds, most have met with limited success. Northern pike, walleye, trout and several species of stream fish have all been tried but usually fail to produce good, sustained fishing without extra management.

A common problem with most of these fishes has been their failure to reproduce and maintain the population. If reproduction does occur, there may not be enough food to support desirable populations with adequate growth. Although other sport fish generally are not recommended for small ponds, some species may do well under certain conditions. If you are interested in stocking one of these alternative fish species, contact your local Conservation Department office for technical advice.

How to stock

Many years of study went into determining the recommended stocking rates for Missouri ponds. These rates allow good fish growth and provide enough fish to enable you to keep some without hurting your pond's future fishing. Good fishing depends on stocking your pond correctly.

The Conservation Department recommends that the maximum number of largemouth bass, bluegill and channel catfish when stocked in combination be 100 bass, 500 bluegill and 100 channel catfish fingerlings per surface acre.

Stocking at lower densities is recommended in some counties due to a lack of adequate soil fertility. Stocking at higher densities usually results in slow growth and poor fish populations of all species.

For more information: To find out the recommended stocking rates for your area, contact the nearest Conservation Department office.

Estimating pond size

You must know the size of your pond so you can determine the proper numbers of fish to stock. Because most ponds are roughly triangular in shape, a rough estimate of the size can be calculated by stepping off about 2 1/2 feet per step–the length of one shoreline, then stepping off the width of the pond at the dam.

Multiply the length and width, divide by the number of square feet in an acre—43,560—and divide by two. This will give a close approximation of the pond size in acres.

For more information: Go to **short.mdc.mo.gov/Z5m** to download the Conservation Department's *Pond Area Estimator.*

When to stock

Because the chance of a new pond becoming contaminated with undesirable species increases as the pond ages, stocking should occur as soon as possible. If there is any doubt about a pond holding water, stock it for less than the planned original size.

Many ponds have failed to produce good fishing because they were stocked at too high a rate. This often happens when a pond has a leak or the owner miscalculates the size when ordering fish. The pond fish population will develop more favorably if it is a few fish short of the recommended stocking rate rather than if stocked with too many fish.

The predator/prey balance is very important. It is best to get bluegill established in the fall, and then introduce largemouth bass the following spring. The optional fish recommended should also be established in advance of the bass.

Hauling and handling

Getting the fish to the pond in good physical condition is essential to produce a healthy population. One way to keep them in good shape is to get them to the pond as quickly as possible. A delay in transport can cause oxygen levels in the water to drop and water temperature to rise, which cause fish to become stressed.

Care in handling also is important. Any wound may become infected by bacteria or fungi. Although the fish may go into the pond alive and wiggling, they may later die from these infections. Stressed and wounded fish rarely live long enough to become lunkers. To minimize problems, use water from your pond to fill the containers you use to transport your fish and aerate with a portable pump.

If there is a temperature difference of 5 degrees or more between the pond and the water in your hauling container, submerge the hauling container in the pond and slowly exchange water until the temperature of the water in the container is the same as that in the pond. Gradually reducing the temperature difference between the transport water and the pond water will help prevent the fish from dying due to shock.

Sources of fish

The development of new ponds, stocked and managed according to recommendations, is a great way to provide more fishing opportunities.

Commercial sources of fish are available throughout Missouri. Please contact your nearest Conservation Department office for a list of commercial fish producers, and for more information concerning pond management.

For more information: Go to **mda.mo.gov/cgi-bin/aqua_directory.cgi** to download a list of commercial fish producers.

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